June 13, 2018

Ms. Michelle Kaysen
United States Environmental Protection Agency Region 5
Mail Code LU-9J
77 West Jackson Boulevard
Chicago, Illinois 60604

RE: Second Quarter 2018 Sentinel Well Monitoring Summary Report, Hartford Petroleum Release Site, Hartford, Illinois

Dear Ms. Kaysen,

212 Environmental Consulting, LLC has prepared the following letter report describing groundwater monitoring activities conducted by Apex Oil Company, Inc. (Apex) for the five sentinel groundwater monitoring wells located at the Hartford Petroleum Release Site (Hartford Site). Apex resumed groundwater monitoring within the sentinel well network beginning in the first quarter 2015 in accordance with the September 18, 2014 letter from the United States Environmental Protection Agency (USEPA) describing the reassignment of activities at the Hartford Site. On July 15, 2016, Apex requested a reduction in the frequency of groundwater monitoring to semiannually based upon thirteen years of data demonstrating that the sentinel wells have not been impacted by the hydrocarbon plume, the groundwater flow direction within the Main Sand being northerly, and the multiple lines of evidence suggesting the plume is currently stable. The USEPA approved the reduction in monitoring frequency on July 22, 2016. The sentinel wells are currently monitored on a staggered semiannual basis (first and third quarter during odd years and second and fourth quarter during even years) to ensure that groundwater samples are collected under various hydraulic conditions. Groundwater monitoring within the sentinel well monitoring network was performed by Apex on May 23, 2018.

BACKGROUND

The five sentinel wells (HMW-25 through HMW-29) were installed in 2003 to serve as an early indicator of petroleum hydrocarbon migration towards the well head protection area for the Village of Hartford drinking water well field (McGuire et al. 2001). The well head protection area shown on Figure 1 is located approximately 600 feet to the southwest of the interpreted extent of petroleum hydrocarbons attributed to historical releases from the refineries and petroleum storage facilities situated to the north and east of the Village of Hartford. The sentinel wells are located between the

well head protection area and the interpreted extent of the petroleum hydrocarbons beneath the Hartford Site.

The four water supply wells located within Hartford are screened across deeper portions of the Main Sand stratum. The two most recently installed groundwater production wells (WSW-3 and WSW-4) were installed by the Village of Hartford to a total depth of approximately 105 feet below ground surface (ft-bgs) and were constructed with between 20 and 35 feet of screen. Groundwater production wells (WSW-1 and WSW-2) were abandoned following the installation of WSW-3 and WSW-4.

The natural groundwater flow regime in the Main Sand stratum has been altered beneath the Hartford Site due to pumping on the British Petroleum (approximately 1,225 gallons per minute(gpm)), Phillips66 (more than 6,000 gpm along the river dock and 3,000 gpm on the refinery), and Premcor (approximately 300 gpm) facilities. During periods of high Mississippi River stage, which are defined by when the river stage measured at the Mel Price Lock and Dam exceeds 410 feet above mean sea level (ft-amsl) (greater than the 75th percentile of all river stage measurements collected since 2004), groundwater flow is generally towards the east to northeast due to recharge from the river and bank storage within the Main Sand. During moderate river elevations, the groundwater flow is northward. During low river stages, which are defined by periods when the river elevation is less than 400 ft-amsl (less than the 25th percentile of all river stage measurements collected since 2004), groundwater flow trends northwesterly to westerly (212 Environmental 2018).

GROUNDWATER ELEVATIONS

The depth to groundwater within the sentinel wells is measured quarterly as part of the site-wide fluid level gauging event performed at the Hartford Site. As a condition of the reduction in sentinel well monitoring frequency, the USEPA requires that quarterly fluid level gauging be reported, specifically if the results of the fluid level gauging indicate a change in groundwater flow direction towards the Hartford drinking water well field. In addition, the depth to water is gauged immediately prior to purging and groundwater sample collection. The depth to groundwater was measured using a Solonist™ water level indicator, decontaminated prior to and immediately following gauging within each sentinel well. The water level indicator was decontaminated using a phosphate-free decontamination solution. The depth to groundwater measurements were made from the pre-marked (surveyed) measuring point on the north side of the well casing.

Table 1 summarizes the depth to water measurements and groundwater elevations measured within the sentinel wells from March 2017 through May 2018. During the fourth quarter 2017 and the first and second quarters 2018, site-wide fluid level gauging was conducted between October 4 and 6, 2017, January 8 and 9, 2018, and April 24 and 26, 2018. Figures 2, 3, and 4 present the potentiometric surface maps for the Main Sand stratum based on the quarterly fluid level measurements recorded in October 2017, January 2018, and April 2018, respectively. Groundwater

flow during the fourth quarter 2017 and first quarter 2018 was generally to the north-northwest, while during the second quarter 2018, groundwater flow was generally to the north. During both fluid level gauging events, the Village of Hartford Production Wells were situated up-gradient of the distribution of petroleum hydrocarbons attributed to the Hartford Site.

GROUNDWATER SAMPLING PROCEDURES

Groundwater was purged and samples collected using a low-flow (minimal drawdown) groundwater sampling methodology (Puls and Barcelona 1996). A ProActive™ Monsoon® submersible pump with a flow controller and dedicated low-density polyethylene (LDPE) tubing was utilized for purging and sample collection. The pumps were installed so that the intake was located approximately five feet below the saturated portion of the screened interval. The flow rate was maintained between 0.1 and 0.5 liters per minute to minimize drawdown and to avoid undue pressure, temperature, or other physical disturbances to groundwater over the sampling interval.

Prior to purging each sentinel well, the submersible pump was decontaminated in the following manner:

- External surfaces were brushed free of loose material, washed with a phosphate-free decontamination solution and potable water, and rinsed with deionized or distilled water.
- Internal surfaces were cleaned by placing the pump in a 5-gallon bucket containing a phosphate-free decontamination solution and allowing the pump to operate for several minutes to circulate the decontamination solution through the impellers and pump housing. The pump was then rinsed by circulating with potable water, followed by a distilled water rinse.

Decontamination fluids and purge water were collected and disposed of in accordance with state and federal regulations.

FIELD ANALYSES

Field parameters (including temperature, pH, specific conductance, dissolved oxygen, oxygen reduction potential, and turbidity) were measured using a Horiba™ U-52® multi-parameter meter over five-minute intervals during purging to ensure a representative groundwater sample was collected. The multi-parameter water quality meter was calibrated daily, in accordance with the manufacturer's guidelines, using a factory-prepared calibration standard. In general, the following stabilization criteria were achieved over three successive readings before collecting groundwater samples:

- Temperature: ± 3%
- pH: ± 0.1
- Specific Conductance: ± 3%

- DO: ± 0.3 milligrams per liter
- ORP: ± 10 millivolts
- Turbidity: ± 10% or <10 nephelometric turbidity units

Following the collection of the groundwater sample, dissolved oxygen was measured in the field using a Hach® Dissolved Oxygen Test Kit (Model No. OX-2P) via a modified Winkler drop count titration method. The additional analysis was recommended in the *Dissolved Phase Investigation Report, Hartford Petroleum Release Site, Hartford, Illinois* (212 Environmental 2016) to aid in the evaluation of natural attenuation processes associated with petroleum hydrocarbons.

SAMPLE COLLECTION AND ANALYSES

Once the stabilization criteria were achieved, groundwater samples were collected in 40-milliliter glass vials preserved with hydrochloric acid and immediately placed in a cooler with ice. Groundwater samples were carefully filled during sample collection to minimize headspace and agitation. The lids on each sample container were tightly secured. The sample labels and chain of custody were filled out completely including sample identification, date and time of collection, project name, client name, field personnel initials, requested analyses, and preservation methods.

A blind duplicate sample was collected from monitoring well HMW-029 during the second quarter 2018 monitoring event. An equipment blank was collected following sampling activities at well HMW-029.

The samples were collected and analyzed in general accordance with the *Test Methods for Evaluating Solid Waste* (USEPA 1997). The groundwater samples collected from the sentinel wells were transported separate from other samples to TekLab, Inc. located in Collinsville, Illinois for analysis of benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tert-butyl ether (MTBE) via USEPA Method 8260B.

GROUNDWATER ANALYTICAL RESULTS

A summary of the groundwater analytical results are provided in Table 2, and a summary of the field parameters with the post-sample dissolved oxygen analysis are provide in Table 3. The laboratory analytical results are included in Attachment A. Concentrations of BTEX and MTBE were below the laboratory reporting limits within all the groundwater samples collected from the sentinel wells during the second quarter 2018. The blind duplicate collected at well HMW-029 and the equipment

blank collected following sampling activities at well HMW-029 were below the laboratory reporting limits for BTEX and MTBE.

The dissolved oxygen concentrations in groundwater following the collection of the sample ranged between 0.4 mg/L at both HMW-026 and HMW-027 and 2.0 mg/L at HMW-025. Dissolved oxygen will continue to be monitored to evaluate the natural attenuation processes associated with petroleum hydrocarbons.

The second quarter 2018 monitoring results indicate that groundwater within the Main Sand stratum is not flowing from the Hartford Site towards the sentinel monitoring wells, nor the Village of Hartford well head protection area. Furthermore, dissolved phase petroleum hydrocarbons were not detected in groundwater samples collected from the sentinel wells during this monitoring event.

If you have any questions regarding the second quarter 2018 sentinel well monitoring results, please contact Paul Michalski at (513) 430-1766 or me at (419) 309-0603.

Sincerely,
212 Environmental Consulting, LLC

Todd Aseltyne, P.G.
Geologist

Attachments

cc: Jordy Federko, Apex Oil Company, Inc.
Tom Miller, Illinois Environmental Protection Agency

TABLES

TABLE 1. SENTINEL WELL FLUID LEVEL GAUGING RESULTS

HARTFORD PETROLEUM RELEASE SITE, HARTFORD, ILLINOIS

Location	Date	Measuring Point Elevation	Depth to Water	Water Elevation
		(ft-amsl)	(ft-bmp)	(ft-amsl)
HMW-025	3/14/2017	427.45	25.80	401.65
	4/20/2017		22.90	404.55
	5/11/2017		14.35	413.10
	7/11/2017		21.43	406.02
	9/25/2017		27.10	400.35
	10/04/2017		27.58	399.87
	1/08/2018		29.85	397.60
	4/25/2018		26.22	401.23
	5/23/2018		23.70	403.75
HMW-026	3/14/2017	425.20	23.45	401.75
	4/20/2017		21.17	404.03
	5/11/2017		14.02	411.18
	7/11/2017		18.36	406.84
	9/25/2017		23.15	402.05
	10/04/2017		23.55	401.65
	1/08/2018		26.81	398.39
	4/25/2018		23.81	401.39
	5/23/2018		22.37	402.83
HMW-027	3/14/2017	430.51	28.32	402.19
	4/20/2017		26.30	404.21
	5/11/2017		19.05	411.46
	7/12/2017		23.18	407.33
	9/25/2017		28.10	402.41
	10/04/2017		28.56	401.95
	1/09/2018		30.89	399.62
	4/25/2018		28.51	402.00
	5/23/2018		27.35	403.16
HMW-028	3/14/2017	430.97	28.15	402.82
	4/20/2017		25.82	405.15
	5/11/2017		18.37	412.60
	7/11/2017[1]		NA	NA
	9/26/2017		28.51	402.46
	10/04/2017		29.01	401.96
	1/09/2018		31.18	399.79
	4/25/2018		28.38	402.59
	5/23/2018		26.91	404.06

TABLE 1. SENTINEL WELL FLUID LEVEL GAUGING RESULTS

HARTFORD PETROLEUM RELEASE SITE, HARTFORD, ILLINOIS

Location	Date	Measuring Point Elevation	Depth to Water	Water Elevation
		(ft-amsl)	(ft-bmp)	(ft-amsl)
HMW-029	3/14/2017	429.13	26.74	402.39
	4/20/2017		24.63	404.50
	5/11/2017		18.40	410.73
	7/11/2017[1]		NA	NA
	9/26/2017		26.53	402.60
	10/04/2017		26.97	402.16
	1/09/2018		28.88	400.25
	4/25/2018		26.91	402.22
	5/23/2018		25.81	403.32

Notes:

[1] - Sentinel Well Locations HMW-028 and HMW-029 had been paved over by the Village of Hartford and unable to be gauged in July 2017. Monitoring activities resumed in September following the completion of a geopysical survey to locate the wells.

ft-amsl - feet above mean sea level

ft-bmp - feet below measuring point

NA - not applicable

TABLE 2. SENTINEL WELL GROUNDWATER ANALYTICAL RESULTS SUMMARY

212 Environmental Consulting, LLC

HARTFORD PETROLEUM RELEASE SITE, HARTFORD, ILLINOIS

Location	Date	Benzene (µg/L)	Ethylbenzene (µg/L)	MTBE (µg/L)	Toluene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Xylenes, Total (µg/L)
HMW-025	06/22/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-025 Dup	06/22/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-025	12/06/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-025	03/14/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HWM-025	09/25/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HWM-025	05/23/18	ND(0.50)	ND(1.0)	ND(2.0)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)
HMW-026	06/22/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-026	12/06/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-026 Dup	12/06/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-026	03/14/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-026	09/25/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-026	05/23/18	ND(0.50)	ND(1.0)	ND(2.0)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)
HMW-027	06/22/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-027	12/06/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-027	03/14/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-027 Dup	03/14/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-027	09/25/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-027	05/23/18	ND(0.50)	ND(1.0)	ND(2.0)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)
HMW-028	06/22/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-028	12/06/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-028	03/14/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-028	09/26/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-028 Dup	09/26/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-028	05/23/18	ND(0.50)	ND(1.0)	ND(2.0)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)
HMW-029	06/22/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-029	12/06/16	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-029	03/14/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-029	09/26/17	ND(2.0)	ND(1.0)	ND(2.0)	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)
HMW-029	05/23/18	ND(0.50)	ND(1.0)	ND(2.0)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)
HMW-029 Dup	05/23/18	ND(0.50)	ND(1.0)	ND(2.0)	ND(1.0)	ND(2.0)	ND(2.0)	ND(2.0)
Tier 1 Class GRO[1]		**5**	**700**	**70**	**1,000**	**NA**	**NA**	**10,000**

Notes:

[1] Tier 1 Class Groundwater Remediation Objectives from Illinois EPA's Tiered Approach to Corrective Action Objectives (35 IAC Part 742)

Dup - duplicate sample

MTBE - methyl tert-butyl ether

J - estimated value

ND(1.0) - non detect at the indicated reporting limit

µg/L - micrograms per liter

TABLE 3. SENTINEL WELL GROUNDWATER FIELD PARAMETERS RESULTS SUMMARY

HARTFORD PETROLEUM RELEASE SITE, HARTFORD, ILLINOIS

Location	Date	pH	Specific Conductivity	Temperature	Oxidation-Reduction Potential	Turbidity	Dissolved Oxygen (Titration)[1]
			(µS/cm)	(deg C)	(mV)	(NTU)	(mg/L)
HMW-025	12/06/16	6.35	1,430	15.96	178	7.6	2.2
	03/14/17	6.53	1,470	16.27	141	1.0	2.4
	09/25/17	6.45	1,380	17.33	125	0.9	0.8
	05/23/18	5.62	1,410	17.48	210	5.4	2.0
HMW-026	12/06/16	6.85	1,480	16.67	-61	14.9	0.2
	03/14/17	6.47	1,370	16.46	-41	114	0.4
	09/25/17	6.38	1,470	19.14	-83	13.3	0.6
	05/23/18	6.57	1,670	20.04	-47	462	0.4
HMW-027	12/06/16	6.95	1,590	16.24	62	10.8	1.4
	03/14/17	6.41	1,850	16.04	28	9.4	1.0
	09/25/17	6.28	2,340	19.29	49	1.1	0.4
	05/23/18	6.54	1,450	21.12	5	4.5	0.4
HMW-028	12/06/16	7.02	1,300	16.29	122	7.8	2.2
	03/14/17	6.49	1,240	15.12	74	6.7	2.2
	09/26/17	6.62	1,340	17.9	124	1.6	1.2
	05/23/18	6.54	1,070	18.86	76	4.1	0.6
HMW-029	12/06/16	7.08	1,480	16.22	54	12.3	1.4
	03/14/17	6.58	1,170	15.90	9	16.3	0.8
	09/26/17	6.72	1,180	18.39	-28	0.7	0.8
	05/23/18	6.73	1,020	18.42	7	13.6	0.6

Notes:

[1] - Dissolved oxygen measured following collection of the groundwater sample using a HACH Dissolved Oxygen Test Kit (Drop Count Titratin, Model OX-2P)

µS/cm - microsiemens per centimeter

deg C - degrees celcius

mg/L - milligrams per liter

mV - millivolts

NTU - nephelometric turbidity unit

FIGURES

FILE: Fig01_SiteLocation_Fig-01.dwg

BP PROPERTY

CONOCOPHILLIPS PROPERTY

HARTFORD WOOD RIVER TERMINAL

FORMER PREMCOR PROPERTY

SHELL PROPERTY (FORMER TANNERY)

FORMER PREMCOR PROPERTY

HARTFORD

ILLINOIS

HARTFORD

SITE LOCATION

N

0 200 400 Feet

ZONE 1

ZONE 2

ZONE 3

ZONE 4

ZONE 5

ZONE 6

NORTH DELMAR AVENUE

WEST RAND AVENUE

EAST RAND

WEST ARBOR STREET

NORTH OLD ST. LOUIS ROAD

WEST BIRCH STREET

EAST BIRCH STREET

NORTH DELMAR AVENUE

NORTH OLIVE AVENUE

WEST CHERRY STREET

EAST CHERRY STREET

NORTH MARKET STREET

WEST DATE STREET

EAST DATE STREET

WEST ELM STREET

EAST ELM STREET

WEST FOREST STREET

EAST FOREST STREET

WEST WATKINS STREET

EAST WATKINS STREET

ILLINOIS STATE ROUTE 3

WEST MAPLE STREET

EAST MAPLE STREET

WEST HAWTHORNE STREET

EAST HAWTHORNE STREET

SOUTH DELMAR AVENUE

SOUTH OLIVE AVENUE

WEST 1ST STREET

EAST 1ST STREET

SOUTH OLD ST. LOUIS ROAD

SOUTH MARKET STREET

WEST 2ND STREET

EAST 2ND STREET

WEST 3RD STREET

EAST 3RD STREET

HMW-025

HMW-026

HMW-027

HMW-028

HMW-029

WSW-1

WSW-2

WSW-3

WSW-4

EXPLANATION

- WSW-3 — VILLAGE PRODUCTION WELL AND DESIGNATION
- WSW-1 — VILLAGE PRODUCTION WELL AND DESIGNATION (ABANDONED)
- HMW-029 — SENTINEL MONITORING WELL AND DESIGNATION
- PROPERTY BOUNDARY (APPROXIMATE)
- VILLAGE OF HARTFORD 1,000-FT MAXIMUM SETBACK ZONE
- HARTFORD PETROLEUM RELEASE SITE BOUNDARY (APPROXIMATE)
- INTERPRETED EXTENT OF LIF RESPONSE (ALL STRATA)
- INTERPRETED EXTENT OF DISSOLVED PHASE BENZENE (2018, MAIN SAND)
- REFINERY AND TERMINAL PIPELINE
- SOIL VAPOR EXTRACTION EFFECTIVENESS ZONE

NOTE: INTERPRETED EXTENT OF ROST RESPONSE FROM APPENDIX A OF "ACTIVE LNAPL RECOVERY SYSTEM 90% DESIGN REPORT", CLAYTON GROUP SERVICES, INC. (JULY 31, 2006) UPDATED USING 2013 UVOST RESULTS.

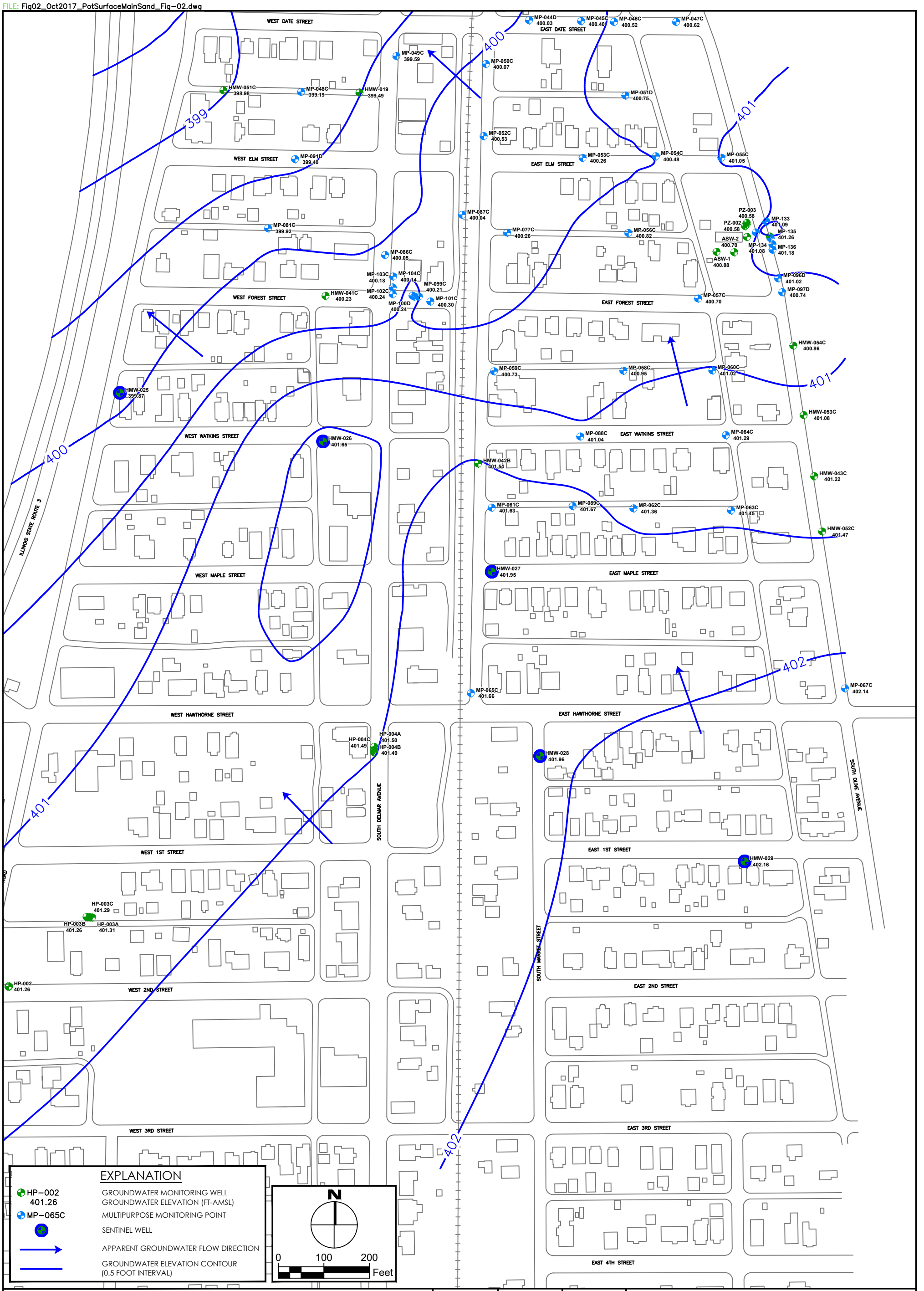
TITLE: FIGURE 1. SITE LAYOUT

SITE: HARTFORD PETROLEUM RELEASE SITE
HARTFORD, ILLINOIS

1" = 400'	18-001-01	06/08/18
SCALE.	PROJECT NO.	DATE.
CDM	TAA	REV. 0
DRAWN.	CHECKED.	REVISION.

TWOONETWO ENVIRONMENTAL
2021 Auburn Avenue
Third Floor Suites
Cincinnati, Ohio 45219

FILE: Fig02_Oct2017_PotSurfaceMainSand_Fig-02.dwg



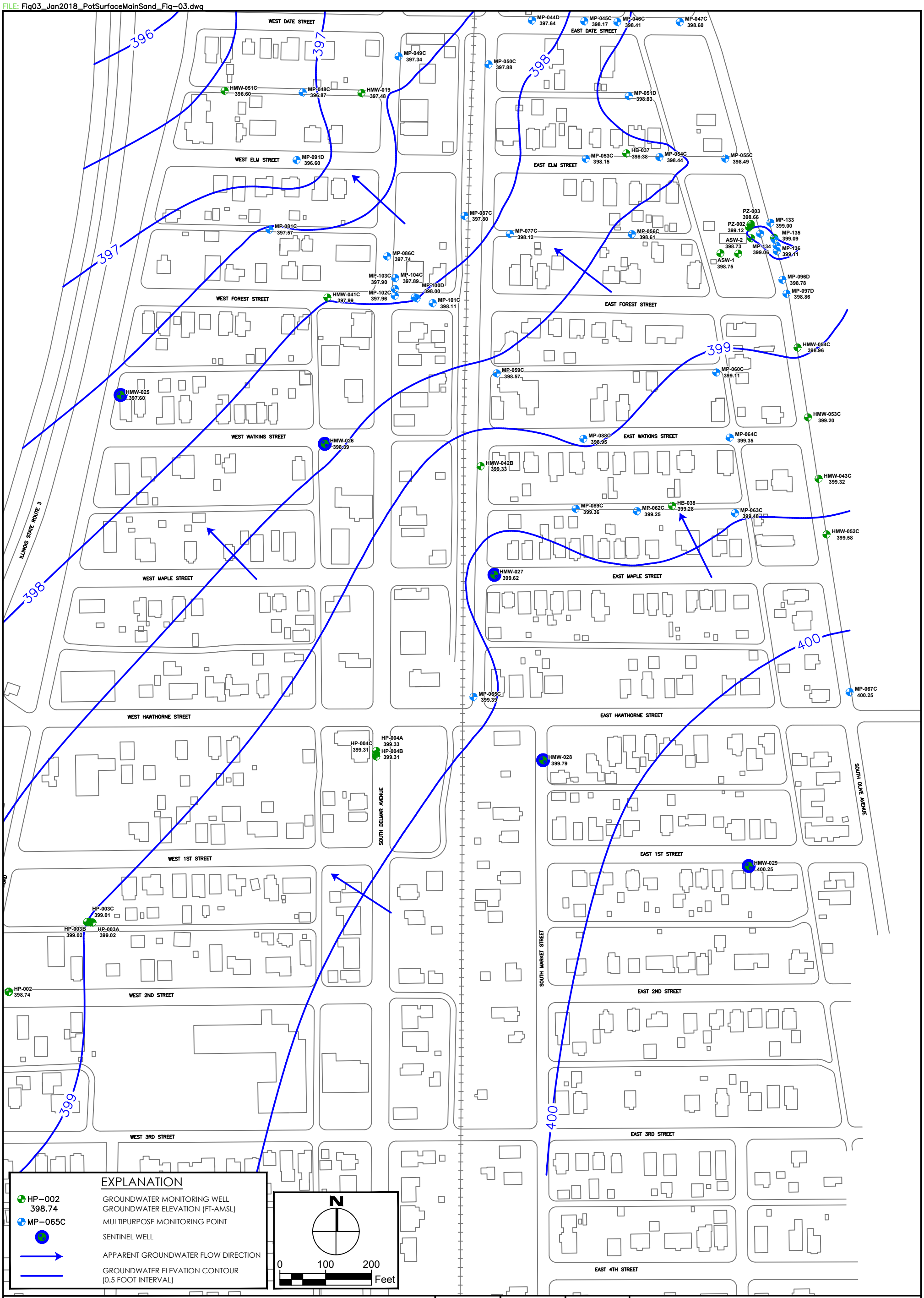
TITLE: FIGURE 2. POTENTIOMETRIC SURFACE MAP
MAIN SAND HYDROSTRATIGRAPHIC UNIT, OCTOBER 2017

SITE: HARTFORD PETROLEUM RELEASE SITE
HARTFORD, ILLINOIS

1" = 200'	18-001-01	06/06/18
SCALE.	PROJECT NO.	DATE.
CDM	TAA	REV. 0
DRAWN.	CHECKED.	REVISION.

TWOONETWO ENVIRONMENTAL
2021 Auburn Avenue
Third Floor Suites
Cincinnati, Ohio 45219

FILE: Fig03_Jan2018_PotSurfaceMainSand_Fig-03.dwg



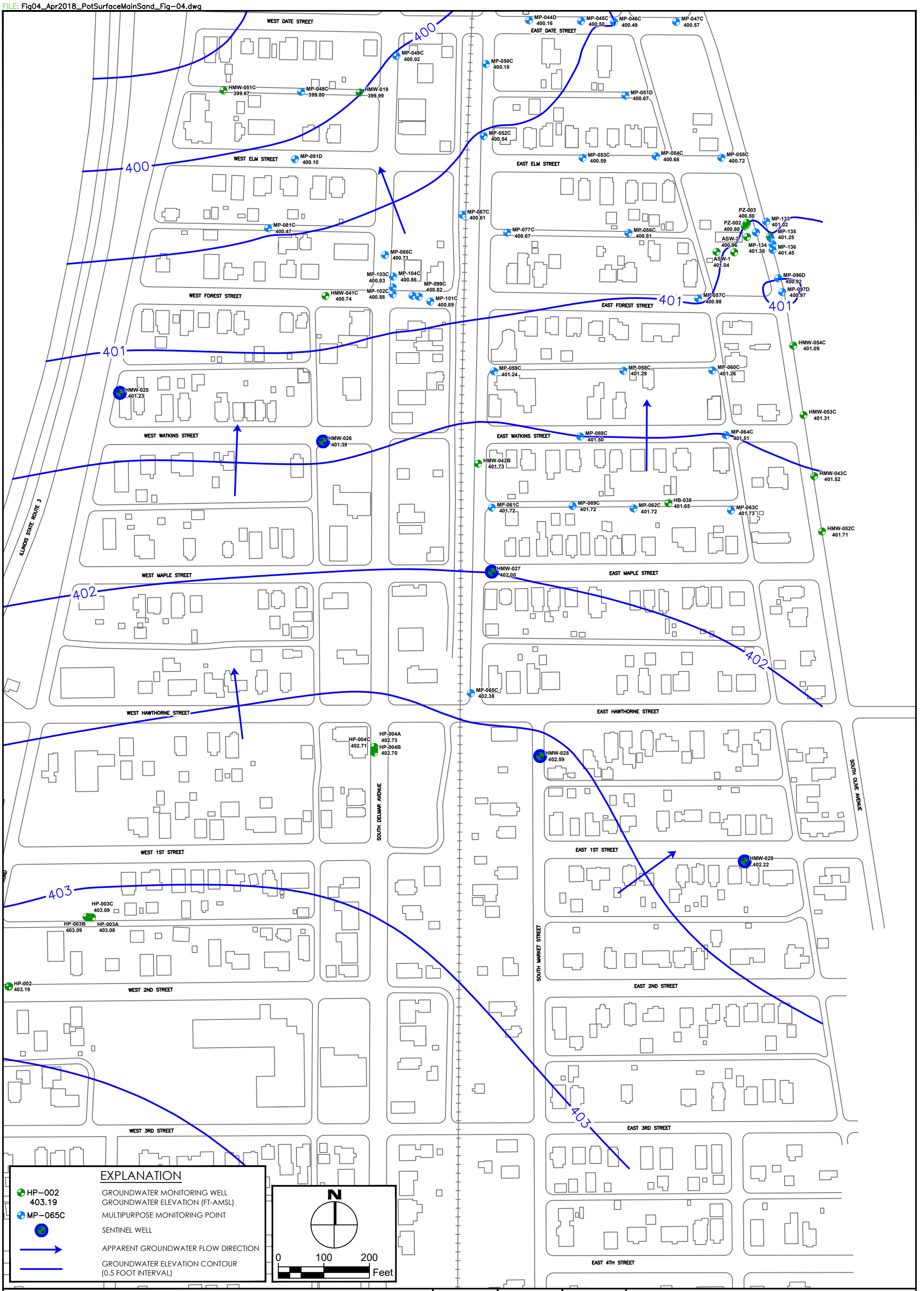
TITLE: FIGURE 3. POTENTIOMETRIC SURFACE MAP
MAIN SAND HYDROSTRATIGRAPHIC UNIT, JANUARY 2018

SITE: HARTFORD PETROLEUM RELEASE SITE
HARTFORD, ILLINOIS

1" = 200'	18-001-01	06/05/18
SCALE.	PROJECT NO.	DATE.
CDM	TAA	REV. 0
DRAWN.	CHECKED.	REVISION.

TWOONETWO ENVIRONMENTAL
2021 Auburn Avenue
Third Floor Suites
Cincinnati, Ohio 45219

FILE: Fig04_Apr2018_PotSurfaceMainSand_Fig-04.dwg



EXPLANATION

- HP-002 403.19 — GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION (FT-AMSL)
- MP-065C — MULTIPURPOSE MONITORING POINT
- SENTINEL WELL
- APPARENT GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (0.5 FOOT INTERVAL)

N

0 100 200 Feet

TITLE: FIGURE 4. POTENTIOMETRIC SURFACE MAP
MAIN SAND HYDROSTRATIGRAPHIC UNIT, APRIL 2018

SITE: HARTFORD PETROLEUM RELEASE SITE
HARTFORD, ILLINOIS

1" = 200'	18-001-01	06/05/18
SCALE.	PROJECT NO.	DATE.
CDM	TAA	REV. 0
DRAWN.	CHECKED.	REVISION.

TWOONETWO ENVIRONMENTAL
2021 Auburn Avenue
Third Floor Suites
Cincinnati, Ohio 45219

ATTACHMENT A

May 30, 2018

Todd Aseltyne
212 Environmental Consulting, LLC
816 Delta Avenue
Cincinnati, OH 45226
TEL: (419) 309-0603
FAX:

RE: Sentinel Well Monitoring **WorkOrder:** 18051587

Dear Todd Aseltyne:

TEKLAB, INC received 7 samples on 5/23/2018 2:50:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Marvin L. Darling II

Marvin L. Darling
Project Manager
(618)344-1004 ex 41
mdarling@teklabinc.com

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18

This reporting package includes the following:

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Client: 212 Environmental Consulting, LLC **Work Order:** 18051587

Client Project: Sentinel Well Monitoring **Report Date:** 30-May-18

Abbr Definition

*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
C -	RL shown is a Client Requested Quantitation Limit	E -	Value above quantitation range
H -	Holding times exceeded	I -	Associated internal standard was outside method criteria
M -	Manual Integration used to determine area response	ND -	Not Detected at the Reporting Limit
R -	RPD outside accepted recovery limits	S -	Spike Recovery outside recovery limits
T -	TIC(Tentatively identified compound)	X -	Value exceeds Maximum Contaminant Level

Case Narrative

http://www.teklabinc.com/

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18

Cooler Receipt Temp: 16.02 °C

Locations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email EHurley@teklabinc.com

Chicago

Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
Fax
Email arenner@teklabinc.com

Client: 212 Environmental Consulting, LLC **Work Order:** 18051587

Client Project: Sentinel Well Monitoring **Report Date:** 30-May-18

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2019	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2019	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2018	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2018	Collinsville
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2018	Collinsville
Arkansas	ADEQ	88-0966		3/14/2019	Collinsville
Illinois	IDPH	17584		5/31/2019	Collinsville
Indiana	ISDH	C-IL-06		1/31/2019	Collinsville
Kentucky	KDEP	98006		12/31/2018	Collinsville
Kentucky	UST	0073		1/31/2019	Collinsville
Louisiana	LDPH	LA170027		12/31/2018	Collinsville
Missouri	MDNR	930		1/31/2019	Collinsville
Missouri	MDNR	00930		5/31/2019	Collinsville
Oklahoma	ODEQ	9978		8/31/2018	Collinsville
Tennessee	TDEC	04905		1/31/2019	Collinsville

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18
Lab ID: 18051587-001
Client Sample ID: HMW-025 180523
Matrix: AQUEOUS
Collection Date: 05/23/2018 9:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.50		**ND**	µg/L	1	05/29/2018 11:20	142356
Ethylbenzene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 11:20	142356
m,p-Xylenes	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:20	142356
Methyl tert-butyl ether	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:20	142356
o-Xylene	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:20	142356
Toluene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 11:20	142356
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:20	142356
Surr: 1,2-Dichloroethane-d4	*	74.7-129		**105.3**	%REC	1	05/29/2018 11:20	142356
Surr: 4-Bromofluorobenzene	*	86-119		**90.2**	%REC	1	05/29/2018 11:20	142356
Surr: Dibromofluoromethane	*	81.7-123		**107.6**	%REC	1	05/29/2018 11:20	142356
Surr: Toluene-d8	*	84.3-114		**94.6**	%REC	1	05/29/2018 11:20	142356

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18
Lab ID: 18051587-002
Client Sample ID: HMW-026 180523
Matrix: AQUEOUS
Collection Date: 05/23/2018 10:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.50		**ND**	µg/L	1	05/29/2018 11:46	142356
Ethylbenzene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 11:46	142356
m,p-Xylenes	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:46	142356
Methyl tert-butyl ether	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:46	142356
o-Xylene	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:46	142356
Toluene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 11:46	142356
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	05/29/2018 11:46	142356
Surr: 1,2-Dichloroethane-d4	*	74.7-129		**105.3**	%REC	1	05/29/2018 11:46	142356
Surr: 4-Bromofluorobenzene	*	86-119		**90.8**	%REC	1	05/29/2018 11:46	142356
Surr: Dibromofluoromethane	*	81.7-123		**104.4**	%REC	1	05/29/2018 11:46	142356
Surr: Toluene-d8	*	84.3-114		**93.3**	%REC	1	05/29/2018 11:46	142356

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18
Lab ID: 18051587-003
Client Sample ID: HMW-027 180523
Matrix: AQUEOUS
Collection Date: 05/23/2018 11:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.50		**ND**	µg/L	1	05/29/2018 12:13	142356
Ethylbenzene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 12:13	142356
m,p-Xylenes	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:13	142356
Methyl tert-butyl ether	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:13	142356
o-Xylene	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:13	142356
Toluene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 12:13	142356
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:13	142356
Surr: 1,2-Dichloroethane-d4	*	74.7-129		**106.3**	%REC	1	05/29/2018 12:13	142356
Surr: 4-Bromofluorobenzene	*	86-119		**89.9**	%REC	1	05/29/2018 12:13	142356
Surr: Dibromofluoromethane	*	81.7-123		**107.2**	%REC	1	05/29/2018 12:13	142356
Surr: Toluene-d8	*	84.3-114		**94.0**	%REC	1	05/29/2018 12:13	142356

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18
Lab ID: 18051587-004
Client Sample ID: HMW-028 180523
Matrix: AQUEOUS
Collection Date: 05/23/2018 12:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.50		**ND**	µg/L	1	05/29/2018 12:40	142356
Ethylbenzene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 12:40	142356
m,p-Xylenes	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:40	142356
Methyl tert-butyl ether	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:40	142356
o-Xylene	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:40	142356
Toluene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 12:40	142356
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	05/29/2018 12:40	142356
Surr: 1,2-Dichloroethane-d4	*	74.7-129		**107.9**	%REC	1	05/29/2018 12:40	142356
Surr: 4-Bromofluorobenzene	*	86-119		**92.1**	%REC	1	05/29/2018 12:40	142356
Surr: Dibromofluoromethane	*	81.7-123		**108.5**	%REC	1	05/29/2018 12:40	142356
Surr: Toluene-d8	*	84.3-114		**95.9**	%REC	1	05/29/2018 12:40	142356

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18
Lab ID: 18051587-005
Client Sample ID: HMW-029 180523
Matrix: AQUEOUS
Collection Date: 05/23/2018 13:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.50		**ND**	µg/L	1	05/29/2018 13:07	142356
Ethylbenzene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 13:07	142356
m,p-Xylenes	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:07	142356
Methyl tert-butyl ether	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:07	142356
o-Xylene	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:07	142356
Toluene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 13:07	142356
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:07	142356
Surr: 1,2-Dichloroethane-d4	*	74.7-129		**106.3**	%REC	1	05/29/2018 13:07	142356
Surr: 4-Bromofluorobenzene	*	86-119		**91.7**	%REC	1	05/29/2018 13:07	142356
Surr: Dibromofluoromethane	*	81.7-123		**109.8**	%REC	1	05/29/2018 13:07	142356
Surr: Toluene-d8	*	84.3-114		**94.1**	%REC	1	05/29/2018 13:07	142356

Client: 212 Environmental Consulting, LLC **Work Order:** 18051587

Client Project: Sentinel Well Monitoring **Report Date:** 30-May-18

Lab ID: 18051587-006 **Client Sample ID:** BD-1 180523

Matrix: AQUEOUS **Collection Date:** 05/23/2018 13:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.50		**ND**	µg/L	1	05/29/2018 13:34	142356
Ethylbenzene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 13:34	142356
m,p-Xylenes	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:34	142356
Methyl tert-butyl ether	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:34	142356
o-Xylene	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:34	142356
Toluene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 13:34	142356
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	05/29/2018 13:34	142356
Surr: 1,2-Dichloroethane-d4	*	74.7-129		**105.9**	%REC	1	05/29/2018 13:34	142356
Surr: 4-Bromofluorobenzene	*	86-119		**92.0**	%REC	1	05/29/2018 13:34	142356
Surr: Dibromofluoromethane	*	81.7-123		**107.9**	%REC	1	05/29/2018 13:34	142356
Surr: Toluene-d8	*	84.3-114		**94.9**	%REC	1	05/29/2018 13:34	142356

Client: 212 Environmental Consulting, LLC **Work Order:** 18051587

Client Project: Sentinel Well Monitoring **Report Date:** 30-May-18

Lab ID: 18051587-007 **Client Sample ID:** EB-1 180523

Matrix: AQUEOUS **Collection Date:** 05/23/2018 13:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Benzene	NELAP	0.50		**ND**	µg/L	1	05/29/2018 14:01	142356
Ethylbenzene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 14:01	142356
m,p-Xylenes	NELAP	2.0		**ND**	µg/L	1	05/29/2018 14:01	142356
Methyl tert-butyl ether	NELAP	2.0		**ND**	µg/L	1	05/29/2018 14:01	142356
o-Xylene	NELAP	2.0		**ND**	µg/L	1	05/29/2018 14:01	142356
Toluene	NELAP	1.0		**ND**	µg/L	1	05/29/2018 14:01	142356
Xylenes, Total	NELAP	2.0		**ND**	µg/L	1	05/29/2018 14:01	142356
Surr: 1,2-Dichloroethane-d4	*	74.7-129		**107.7**	%REC	1	05/29/2018 14:01	142356
Surr: 4-Bromofluorobenzene	*	86-119		**91.4**	%REC	1	05/29/2018 14:01	142356
Surr: Dibromofluoromethane	*	81.7-123		**107.8**	%REC	1	05/29/2018 14:01	142356
Surr: Toluene-d8	*	84.3-114		**93.5**	%REC	1	05/29/2018 14:01	142356

Client: 212 Environmental Consulting, LLC **Work Order:** 18051587

Client Project: Sentinel Well Monitoring **Report Date:** 30-May-18

SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS

Batch 142356 **SampType:** MBLK Units µg/L

SampID: MBLK-R180529A-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Benzene	0.50		ND						05/29/2018
Ethylbenzene	2.0		ND						05/29/2018
m,p-Xylenes	2.0		ND						05/29/2018
Methyl tert-butyl ether	2.0		ND						05/29/2018
o-Xylene	2.0		ND						05/29/2018
Toluene	2.0		ND						05/29/2018
Xylenes, Total	2.0		ND						05/29/2018
Surr: 1,2-Dichloroethane-d4			54	50.00		108.4	79.6	118	05/29/2018
Surr: 4-Bromofluorobenzene			45	50.00		89.4	83.9	115	05/29/2018
Surr: Dibromofluoromethane			54	50.00		108.9	84.9	113	05/29/2018
Surr: Toluene-d8			47	50.00		94.2	86.7	112	05/29/2018

Batch 142356 **SampType:** LCSD Units µg/L RPD Limit 40

SampID: LCSD-R180529A-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Benzene	0.50		53	50.00	0	106.5	53.43	0.32	05/29/2018
Ethylbenzene	2.0		48	50.00	0	95.5	48.77	2.13	05/29/2018
m,p-Xylenes	2.0		98	100.0	0	97.9	99.10	1.22	05/29/2018
Methyl tert-butyl ether	2.0		53	50.00	0	106.5	52.74	0.94	05/29/2018
o-Xylene	2.0		49	50.00	0	98.1	49.92	1.74	05/29/2018
Toluene	2.0		48	50.00	0	95.3	48.80	2.36	05/29/2018
Xylenes, Total	2.0		150	150.0	0	98.0	149.0	1.39	05/29/2018
Surr: 1,2-Dichloroethane-d4			54	50.00		107.4			05/29/2018
Surr: 4-Bromofluorobenzene			44	50.00		87.4			05/29/2018
Surr: Dibromofluoromethane			54	50.00		108.0			05/29/2018
Surr: Toluene-d8			46	50.00		92.8			05/29/2018

Batch 142356 **SampType:** LCS Units µg/L

SampID: LCS-R180529A-1

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Benzene	0.50		53	50.00	0	106.9	77.8	120	05/29/2018
Ethylbenzene	2.0		49	50.00	0	97.5	81.8	117	05/29/2018
m,p-Xylenes	2.0		99	100.0	0	99.1	82.7	118	05/29/2018
Methyl tert-butyl ether	2.0		53	50.00	0	105.5	73.1	120	05/29/2018
o-Xylene	2.0		50	50.00	0	99.8	80.1	118	05/29/2018
Toluene	2.0		49	50.00	0	97.6	82.2	113	05/29/2018
Xylenes, Total	2.0		150	150.0	0	99.3	82.7	118	05/29/2018
Surr: 1,2-Dichloroethane-d4			52	50.00		104.0	79.6	118	05/29/2018
Surr: 4-Bromofluorobenzene			43	50.00		86.6	83.9	115	05/29/2018
Surr: Dibromofluoromethane			55	50.00		109.0	84.9	113	05/29/2018
Surr: Toluene-d8			46	50.00		92.6	86.7	112	05/29/2018

Client: 212 Environmental Consulting, LLC **Work Order:** 18051587

Client Project: Sentinel Well Monitoring **Report Date:** 30-May-18

SW-846 5030, 8260B, VOLATILE ORGANIC COMPOUNDS BY GC/MS

Batch 142356 **SampType:** MS Units **µg/L**

SampID: 18051587-001AMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Benzene	0.50		**58**	50.00	0	115.5	57.8	125	05/29/2018
Ethylbenzene	2.0		**54**	50.00	0	107.9	72.8	123	05/29/2018
m,p-Xylenes	2.0		**53**	50.00	0	106.7	74.6	125	05/29/2018
o-Xylene	2.0		**53**	50.00	0	106.8	73	127	05/29/2018
Toluene	2.0		**51**	50.00	0	101.2	75.8	123	05/29/2018
Xylenes, Total	2.0		**110**	100.0	0	106.8	73	127	05/29/2018
Surr: 1,2-Dichloroethane-d4			**56**	50.00		111.1	74.7	129	05/29/2018
Surr: 4-Bromofluorobenzene			**45**	50.00		89.5	86	119	05/29/2018
Surr: Dibromofluoromethane			**55**	50.00		109.5	81.7	123	05/29/2018
Surr: Toluene-d8			**47**	50.00		93.9	84.3	114	05/29/2018

Batch 142356 **SampType:** MSD Units **µg/L** RPD Limit **20**

SampID: 18051587-001AMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Benzene	0.50		**53**	50.00	0	105.7	57.74	8.86	05/29/2018
Ethylbenzene	2.0		**50**	50.00	0	99.1	53.97	8.56	05/29/2018
m,p-Xylenes	2.0		**50**	50.00	0	99.0	53.36	7.49	05/29/2018
o-Xylene	2.0		**49**	50.00	0	98.3	53.39	8.27	05/29/2018
Toluene	2.0		**48**	50.00	0	95.9	50.62	5.38	05/29/2018
Xylenes, Total	2.0		**99**	100.0	0	98.7	106.8	7.88	05/29/2018
Surr: 1,2-Dichloroethane-d4			**53**	50.00		105.9			05/29/2018
Surr: 4-Bromofluorobenzene			**46**	50.00		91.8			05/29/2018
Surr: Dibromofluoromethane			**54**	50.00		108.8			05/29/2018
Surr: Toluene-d8			**47**	50.00		93.9			05/29/2018

Receiving Check List

http://www.teklabinc.com/

Client: 212 Environmental Consulting, LLC
Work Order: 18051587
Client Project: Sentinel Well Monitoring
Report Date: 30-May-18

Carrier: Josh Katzmarek
Received By: AMD

Completed by: Amber M. Dilallo
On: 23-May-18

Reviewed by: Marvin L. Darling
On: 23-May-18

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 16.02
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☑	No VOA vials ☐
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA ☐
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

Headspace was present in the volatile vials for HMW-026 180523 and HMW-029 180523. Per Todd Aseltyne, proceed with analysis. - adilallo - 5/23/2018 3:47:25 PM

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 18051587

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: 212 Environmental
Address: 816 Delta Avenue
City / State / Zip: Cincinnati OH 45226
Contact: Todd Aseltyne Phone: 419-309-0603
E-Mail: todd.aseltyne@212environmental.com Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 16.0 °C
Preserved in: ☐ Lab ☐ Field FOR LAB USE ONLY
Lab Notes:
AH OK HS in all other vials. OM 5/23/18

Comments:
M,P,O Xylenes in addition to total
HMW-026 has high turbidity

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☐ No

Project Name / Number: Sentinel Well Monitoring

Sample Collector's Name: J Katzmark

Results Requested: ☒ Standard ☐ 1-2 Day (100% Surcharge) ☐ Other_______ ☐ 3 Day (50% Surcharge)

Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	Water	Drinking Water	Soil	Sludge	Sp. Waste	BTEX/MTBE
18051587 001	HMW-025 180523	5/23/18 9:00					2				✓					✓
002 *	HMW-026 180523	5/23/18 10:00					2				✓					✓
003	HMW-027 180523	5/23/18 11:00					2				✓					✓
004	HMW-028 180523	5/23/18 12:00					2				✓					✓
005 *	HMW-029 180523	5/23/18 1:00					2				✓					✓
006	BD-1 - 180523	↓					2				✓					✓
007	EB-1 - 180523	↓					2				✓					✓

Relinquished By	Date / Time	Received By	Date / Time
[signature]	5/23/18 14:50	B Dilorio	5/23/18 14:50

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE – LAB YELLOW – SAMPLER'S COPY